

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference HARD1.005VPC		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/27451	International filing date (day/month/year) 05/10/2000	Priority date (day/month/year) 08/10/1999	
International Patent Classification (IPC) or national classification and IPC B32B13/00			
Applicant JAMES HARDIE RESEARCH PTY LIMITED et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input checked="" type="checkbox"/> Certain defects in the international application VIII <input checked="" type="checkbox"/> Certain observations on the international application 			

Date of submission of the demand 07/05/2001	Date of completion of this report 07.12.2001
Name and mailing address of the international preliminary examining authority: European Patent Office D-80299 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Coquelin, J.



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International application No. PCT/US00/27451

I. Basis of the report

1. With regard to the elements of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):
Description, pages:

1-11 as originally filed

Claims, No.:

1-20 as originally filed

Drawings, sheets:

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:

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the drawings, sheets:

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 2,5-10,12,13,16,19,20
	No:	Claims 1,3,4,11,14,15,17,18
Inventive step (IS)	Yes:	Claims
	No:	Claims 1-20
Industrial applicability (IA)	Yes:	Claims 1-20
	No:	Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

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Item V, novelty and inventive step

1. The following documents are mentioned in the International Search Report (ISR):

D1 = US 4361616 A (Stamicarbon BV)

D2 = JP 52-051719 A (Kanebo)

D3 = JP 52-052429 A (Kanebo)

D4 = US 5395685 A (Gebruder Knauf Westdeutsche Gipswerke).

D2 and D3 have been studied only in the form of the abstract cited in the ISR.

2. The present claims 1, 11 and 18 are independent claims directed to a building material and respectively a method for preparing (such) a building material. The subject matter of present claims 1, 3, 4, 11, 14, 15, 17 and 18 lacks novelty. Non novel subject matter cannot be regarded as involving an inventive step. It is not seen at present why The additional features provided by the remainder of the claims are not seen as contributing an inventive step.

2.1 D1, see more particularly the passages cited in the ISR, discloses laminated board structures having improved mechanical properties and obtained by bonding an insulation sheet, e.g., an optionally foamed gypsum sheet, to a sheet of fiber-cement. The bonding agent is an addition polymer which preferably contains (pendant) acid groups, e.g., carboxylic groups. The cement layer is 1-50 mm thick, the insulation layer 10-500 mm thick. Several acid monomers are cited. Further monomers are listed which include ethylene, propylene and vinyl acetate.

2.2 According to D2, a fire-proofing, heat-resistant material is made of, e.g., gypsum board coated with a thin layer of an aqueous cement slurry containing alkali resistant glass fibres.

2.3 D3 is apparently more concerned with shock resistance and water resistance. Among others, it describes a composite panel comprising a gypsum board coated with an aqueous cement slurry containing alkali resistant glass fibres. A wall material, e.g., wall paper, fibre wall or decorative plate is or may be adhered to the outer surface of the composite.

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2.4 D4 similarly concerns gypsum boards lined with non-woven glass mat, the latter carrying an impregnated inorganic binder (or cement) at least partially set with water. An organic binder may also be present. The composite material is non-combustible.

Item VII, certain defects

1. None of documents D1-D4 is acknowledged in the introductory part of the description.
2. The applicant is kindly invited to provide a copy of at least the relevant parts of the reference mentioned at the bottom of page 1 of the present description (Gypsum Association- Fire Resistance Manual ...).
3. Page 6, line 7 presumably should read "nor".
4. Throughout the description and claims, use is made of non-SI units of measurement. The original values should be kept between parentheses placed after the replacement values. Page 6, line 23 could for instance be amended to read: "per unit of surface area" (the actual unit is useless and needs not be mentioned). Please, note that the correct notation for "second" is "s", not "sec" (page 9, line 22).

Item VIII, certain obscurities

1. In claim 1, the feature "is laminated" possibly is meant as a **process feature**. Claim 1 however was interpreted as simply requiring the presence of the two relevant layers associated to one another in any manner to form a unitary material, with or without further coextensive layers therebetween or thereon.
2. **Process features** as may be found in claims 1 and 7-10 can barely be recognised any limiting virtue. For reasons of clarity, they should be replaced by corresponding features reading, e.g.: "is obtainable by roll-pressing" (claim 7).
3. In claim 1, the indicated value of fire resistance is regarded as a statement of desired result. As such, it cannot contribute to the definition of the claimed invention. The desired result should always be achieved by means of the material features

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specified. If the skilled person were left without any clear indication how to select and associate suitable components of the composite material in order for the composite to achieve the desired property or properties, then the invention so defined cannot be recognised any inventive step because lots of experimental work is still needed.

4. No clear difference is seen between claims 11-17 and the foregoing claims. The former appear to give a more general definition and, as such, should be placed first. The terms "sheet" and "panel" have no generally accepted meaning, hence do not contribute a clear limitation over the term "layer".
5. Claim 12 apparently simply enounces a desired result.
6. Claim 17 lacks clarity because "self-supporting" has no clear meaning. Depending inter alia on length and width, a layer having the same thickness will hold or break in the absence of a supporting member.
7. The expressions "about", "and the like" and "approximately" are considered to expand the definitions or corresponding statements in an indeterminate manner, thus to obscure the description, support of the claims, hence the claims.
8. The "incorporation by reference" also is considered to expand the description in an indeterminate manner (see especially page 4, lines 22-23).
9. Page 7, table 1, last line is presumably in error as it gives a value of 0.016 mm supposed to be a 0.001 inch depth in a wire brush surface abrasion test.
10. The passage on page 11, lines 22-24, is regarded as tending to expand the description, support of the claims, in an indeterminate manner, hence to obscure the claims.

WHAT IS CLAIMED IS:

1. A building material comprising:
 - a fiber-cement sheet; and
 - a gypsum panel, wherein the fiber-cement sheet is laminated to the gypsum panel to form a single piece laminate composite having a fire resistance rating of at least one hour according to ASTM E 119.
- 5 2. The building material of Claim 1, wherein the single piece laminate composite has a thickness of about 5/8 inch.
- 10 3. The building material of Claim 2, wherein the fiber-cement sheet has a thickness of about 1/8 inch.
4. The building material of Claim 2, wherein the gypsum panel has a thickness of about 1/2 inch.
- 15 5. The building material of Claim 1, wherein the fiber-cement sheet is adhered to the gypsum panel with an adhesive layer between about 4.5 mil and 6 mil thick.
6. The building material of Claim 1, wherein the fiber-cement sheet is adhered to the gypsum panel with an adhesive of polyvinyl acetate.
7. The building material of Claim 1, wherein the single piece laminate composite is roll-pressed.
- 20 8. The building material of Claim 1, wherein the single piece laminate composite is pressed in a single or stacked configuration.
9. The building material of Claim 1, wherein at least one surface of the single piece laminate composite is sealed with a polymeric water-based emulsion or solvent-based sealant.
- 25 10. The building material of Claim 1, wherein at least one surface of the single piece laminate composite is primed with a water-based or solvent-based paint.
11. A building material, comprising:
 - a fiber-cement layer; and
 - a gypsum layer, wherein the gypsum layer is laminated to the fiber-cement layer to form a single piece laminate composite.

12. The building material as recited in Claim 11, wherein the single piece laminate composite has a fire resistance rating greater than that of either the fiber-cement layer or the gypsum layer individually.

13. The building material as recited in Claim 11, wherein the single piece laminate composite has a thickness of about 5/8 inch.

14. The building material as recited in Claim 13, wherein the fiber-cement layer has a thickness of about 1/8 inch.

15. The building material as recited in Claim 13, wherein the gypsum layer has a thickness of about 1/2 inch.

16. The building material as recited in Claim 11, wherein the fiber-cement layer is laminated to the gypsum layer with an adhesive that is between about 4.5 mil and 6 mil thick.

17. The building material as recited in Claim 11, wherein the fiber-cement layer has a thickness such that the fiber-cement layer individually is not self-supporting.

18. A method for preparing a building material for installation comprising laminating a fiber-cement layer to a gypsum panel to form a single piece laminate composite.

19. The method of Claim 18, wherein the fiber-cement layer is laminated to the gypsum panel using a polyvinyl acetate adhesive.

20. The method of Claim 18, wherein laminating the fiber-cement layer to the gypsum panel includes pressing the fiber-cement layer to the gypsum panel at a pressure of at least 38 psi.